DOCUMENT RESUME

ED 478 945 CE 084 845

AUTHOR Lutz, Ronald J.

TITLE Guidelines for Assessing Michigan Standards in Industrial Technology Education.

PUB DATE 2000-01-00

NOTE 38p.

PUB TYPE Guides - Non-Classroom (055)

EDRS PRICE EDRS Price MF01/PC02 Plus Postage.

DESCRIPTORS *Academic Standards; Definitions; Educational History; Educational Philosophy; Evaluation Criteria; *Evaluation Methods; Guidelines; Program Administration; *Program Evaluation; Program Improvement; Records (Forms); *State Standards; Statewide Planning; *Technology Education; *Trade and Industrial Education

IDENTIFIERS *Michigan

ABSTRACT

This document presents Michigan's standards in industrial technology education and details assessment procedures that will enable Michigan industrial technology teachers to analyze, upgrade, and justify their current programs. The introductory section contains the following materials: a discussion of supportive organizations; an overview of development of the Michigan standards and assessment of industrial education; a list of educators in the 1998-1999 summer seminar group; background information on industrial technology education; a statement of the philosophy of industrial technology education; instructions for assessing an industrial technology program; an assessment data report form; and an assessment summary form. The remainder of the document presents the Michigan standards for industrial technology programs, which cover the following areas: (1) philosophy (development, utilization, reviewing and revising); (2) instructional program (content areas, goals, objectives, content); (3) instructional strategies (planning, implementing, methods, evaluation); (4) safety and health (program, physical environment, records); (5) student populations served (student needs, student diversity); (6) support systems (human resources, physical resources, financial resources); (7) administration and supervision (staffing, planning and organization, budgeting, directing and monitoring, data collecting and reporting, communicating); (8) instructional staff (legal/regulatory qualifications, professional/educational responsibilities, personal qualities); and (9) public relations (target populations, media). (MN)

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Guidelines for Assessing Michigan Standards In

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Introduction

This document of standards and assessment procedures will measure the quality of industrial technology programs. Industrial technology teachers will find this assessment process useful to analyze, upgrade, and justify their current programs. It will improve communication between students, teachers, administration, staff, industry and community; therefore, the goals of all stakeholders may be achieved. It will help evaluate, improve and sustain quality programs through a measurable and organized approach. It will provide direction in relation to career awareness, exploration and preparation, and it will enrich marketing and public relation efforts of your program. Most importantly it will provide students with quality programs that will prepare them for success in the world of work and further training.

Supportive Organizations

Teachers of industrial technology need to recognize the background of the affiliated organizations, as they play a major role in the development of industrial technology curricula. These organizations include, Michigan Industrial and Technology Education Society (MITES), Vocational Industrial Clubs in America (VICA) and Association of Career and Technology Educators (ACTE).

MITES, formerly known as MIES (Michigan Industrial Education Society), is a state organization that supports Industrial Technology Education, Technology Education, and Career and Technology. Membership is distributed among 20 regions across the state from Calumet to Detroit. Each year MITES conducts competitive regional and state exhibitions of student designs and prototypes in categories such as woodworking technology, metalworking technology, architectural and mechanical drawing, computer-aided design (CAD), computer assisted machining (CAM), graphic arts, and many others. Students also compete in the analysis, diagnosis, and repair of technical products, such as automotive technology. These competitive exhibitions provide deserved recognition for thousands of students, hundreds of teachers, and many administrators, but most importantly they help to prepare our youth for the world of work.

VICA is a national organization that serves nearly 250,000 high school and college students enrolled in technical, skilled, and service occupations. The goal of VICA is to prepare students in leadership, teamwork, citizenship and character development. It builds and reinforces self-confidence, work attitudes, and communication skills. VICA is affiliated with more than 500 corporations, trade associations, and labor unions.

The ACTE (formerly known as AVA) has 38,000 members that include teachers, educational administrators, counselors, business and industry partners and students who all have an interest in workforce education. The mission of ACTE is to promote professional development, program improvement, policy development and marketing. This will encourage career development, professional involvement, and leadership among members, foster excellence, advocate national public policies to benefit vocational education, and market career and technology education. The ACTE is actively involved with Capital Hill in order to testify on behalf of work-force education, school-to-work initiatives and the integration of vocational-technical and core academic education.

MITES, VICA and ACTE also offer activities that include local, state, and national competitions where students can demonstrate their occupational and leadership skills. The support and knowledge provided from organizations such as MITES, VICA, and ACTE is of vital importance to quality curriculum development and program support.

Development of Michigan Standards and Assessment of Industrial Education

In 1978, through a study issued by the United States Office of Education and several professional organizations, a set of National standards were developed to promote quality among industrial education programs. During 1980 and 1981, they were revised in ten regions of the country. In these regions, ten standard topics were established. Over 400 industrial education teachers, state and local supervisors, and consultants were involved in developing this set of standards. A national advisory committee, a five-member subcommittee, and a local advisory committee met periodically to assist in all aspects. The groups researched, reviewed and considered all input, and refined the standards and guides.

During the same time period a team of Michigan industrial education teachers and the state department personnel assembled the "Standards for Industrial Arts Programs" (blue booklet). Due to the extensive developmental process, it is believed that these standards contained the best thinking of industrial education professionals at the time of completion.

During the summers of 1998 and 1999, a select group of educators met to blend existing standards into this assessment instrument. The documents mentioned above were reviewed along with appendix A and B of the certification standards and the "Technology and Career Employability Skills" sections of the Michigan Core Curricular Standards. The group field tested this document and found that it accurately reflects current thinking in career and technology education in Michigan as it relates to industrial technology education.

Educators in the 1998/1999 Summer Seminar Group

Patricia J. Adolfs, Teacher
Business/School-to-Work
Avondale High School

Brad Case, Teacher
Drafting/Woods
Chippewa Hills High School

Michael D. Gee, Teacher
Woodworking/Technology
East Jordan High School

Jason Hoefler, Teacher
Home Repair/Manufacturing Tech.
Hastings High School

Mark W. Jewell, Instructor
Welding Technology
Mid Michigan Community College

Frank C. Koehle, Teacher
Woodworking/Metals/Foundry
Ludington High School

Fred Bryant, Teacher
Woodworking/Welding/Bldg. Trades
Engadine High School

John D. Cross, Teacher
Woodworking/Construction
Houghton Lake High School

William H. Green, Teacher
Woodworking/Construction
Calumet High School

Jason Jeffrey, Teacher
Drafting/Plastics Tech.
Big Rapids High School

Brian Kloha, Teacher
Global Technology/Power
Essexville Garber High School

Rick LaBar, Teacher
Vocational Drafting
St. Johns High School

Tom Longo, Teacher
Industrial Arts
Tri County Middle School

Jack D. Rader, Teacher
Industrial Technology
Flint Northwestern

Adam C. Samp, Teacher
Metals/Plastics Tech.
West Ottawa High School

Gary Shimunek, Teacher
Vocational/Building Trades
Montcalm Area Career Center

Ronald E. Suderman, Teacher
Building Trades/Welding
Midland Public Schools

Jason Youngblood, Teacher
Drafting and Technology
Chippewa Valley Schools

Ronald J. Lutz, Professor
Industrial Education
Central Michigan University

Andrew J. Roberts, Teacher
Graphic Communications/Drafting
Flint Community Schools

Donald Schadd, Teacher
Woodworking/Welding/Sm. Engines
Bad Axe High School

Eric Shumaker, Teacher
Vocational Drafting
Lake Shore High School

Peter M. Twork, Teacher
Manufacturing
Kent Transition Center

For more information, you may contact anyone on this list.

Location of Summer Seminar Participants

Background of Industrial Technology Education

Industrial technology education has held a variety of terms throughout the twentieth century. Industrial education appeared in high school curriculums during the early 1880's. By 1900 manual training had become the focus. Industrial education programs were federally funded after the Vocational Education (Smith-Hughes) Act of 1917 was passed.

After the Smith-Hughes Act and World War I the industrial revolution was magnified. There was a demand for more and better technical training. These new demands and methods lead to studies that put intense pressure on education. In response to these pressures there was a progressive education movement that brought about many program improvements during the 1920-30's. It was not a uniform effort despite recent program changes and increased popularity of industrial education.

During World War II and the years after World War II curriculum changes were very strong for industrial arts. In the 1960's, industrial arts enjoyed record numbers of research projects to revise curriculum and methodology. Vocational and industrial technology embraced the concepts of career education in the 1970's. During the 1980's, two undocumented reports, "Back to Basics" and "A Nation at Risk," provided many negative myths about American education. In 1995, The Manufactured Crisis provided educators with a positive image of American education and refuted the negative myths of the 80's. During the late 1990's, in Michigan, a division occurred in industrial technology education and created two new certification areas: Industrial Technology (Industrial Arts - IX) and Technology and Design (Technology Education - TX).

Today, industrial technology education continues to be an ever important part of education in the U.S., providing the much needed skills required to prepare American youth for independent living and meeting the country's employment needs.

Industrial Technology Education Philosophy

Industrial technology curriculums shall provide students the opportunity to develop skills, which may be applied in other classes, on the job, or in the home. The skills that students learn through participation in quality industrial education programs shall include planning, organizing, researching, problem solving and decision-making. In particular, students shall be able to select raw materials, determine costs, manipulate materials into a prototype, refine prototypes into a manufactured product, troubleshoot problems, repair and maintain tools and equipment, and experiment with many materials and processes in a variety of settings. Students shall also experience career awareness, exploration, and preparation through class activities.

Industrial technology students shall become confident, dedicated, persistent, realistic, responsible and practical workers. Industrial technology also teaches students how to deal with failure. When they go back to the drawing board they make new parts to ensure quality, or look for other possibilities.

Industrial technology shall impose no limitations on any students based on sex, race, religion, national origin, creed, special needs, or other factors that may be perceived.

Students who do not participate in industrial technology courses would deny themselves an excellent opportunity. There are few programs available that encompass as many skills and prepare students for life as well as industrial technology does. With technology rapidly changing our world, a great need for a workforce possessing these skills, has and will continue to be a demand that industrial technology students meet.

An ideal industrial technology program will fully implement the proven technologies of yesterday, incorporate the technology of today, and plan for the advancements of tomorrow. Parents, business and industry representatives, industrial technology faculty, school administrators and boards of education, all play a major role in the development and sustainability of an industrial technology program that is to be successful now and in the future. This will serve to benefit all in our society by creating a quality citizenry and workforce.

Instructions for Assessing Your Industrial Technology Program

This document is intended to assess your *entire* industrial technology program, not to evaluate individual courses within the department. Although no industrial technology program is perfect, every school should strive to have the highest quality program possible. By using this document, you may recognize your program's achievements and identify areas that can be improved. By following the step by step instructions, this assessment may be completed and implemented in a minimal amount of time.

There are **four** significant steps for a successful assessment. Read through all of them before beginning the assessment.

1. Planning the Assessment

A. Form an industrial technology (IT) assessment team with approximately 4-7 members. It is recommended that the team should consist of representatives from following groups: IT teachers, school administrators, guidance counselors, recent program graduates, involved parents, and community business and industry members.

B. Give each member a copy of this document to review before officially meeting.

C. The teacher(s) should complete the scoring and the comments section of the assessment prior to the team meeting.

D. You may want to appoint a chairperson to run the meeting and someone to record the assessment results.

E. Determine the time, place and length of the meeting.

2. Conducting the Assessment

A. At the assessment meeting read each standard item by item.

B. Discuss how your program relates to the standard objective.

NOTE: Step C may be done by each individual team member, or done as a group.

C. Circle the number that best corresponds to how well your program relates to the objective based on the following scale: NA-Standard is not applicable to your program, 1-Poor, 2-Below Average, 3-Average, 4-Above Average, 5-Outstanding

D. If you have comments or improvement suggestions, write them in the space provided below the standard objective.

E. Calculate the average scores for each standard. Be sure to make NA adjustments. Below is an example.

		10	# of Objectives *minus*		
		- 2	# of NA's	4.5	
Standard Total 36	*divided by*	8	$8\overline{)36}$ (32, 4)	= 4.5	Average Score

3. Reporting the Findings of the Assessment

A. On the **Assessment Data Report**, in *Table 1*, write in the average scores from each of the nine standards. If needed, *Table 1* provides space for team member scores to be recorded and averaged to get a group average score.

B. Plot your group scores on the *Assessment Graph* to get a visual representation of the results. See sample.

C. Complete the *Assessment Summary* with a brief description of significant findings for each standard, such as your program's strengths or specific suggestions for improving deficiencies.

4. Overcoming Deficiencies Identified through Assessment

A. Decide who will be responsible for implementing improvement strategies suggested earlier.

B. Develop and record a time-line for reassessment of improvements and follow-up on these dates.

C. Determine the date for the next full assessment.

D. Keep this document on file for future reference.

Assessment Data Report

School _____

Date _____

Team Members 1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

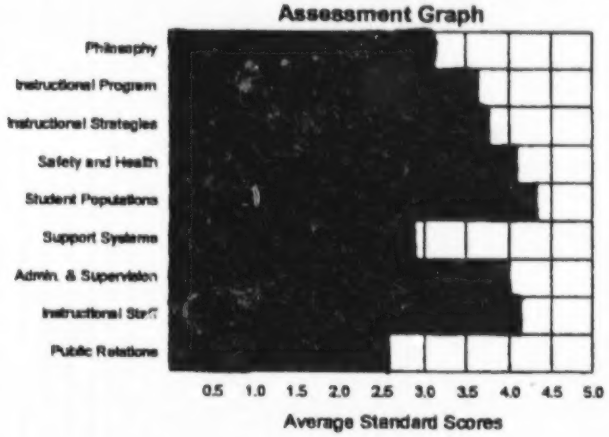
Table 1

Team Member Scores

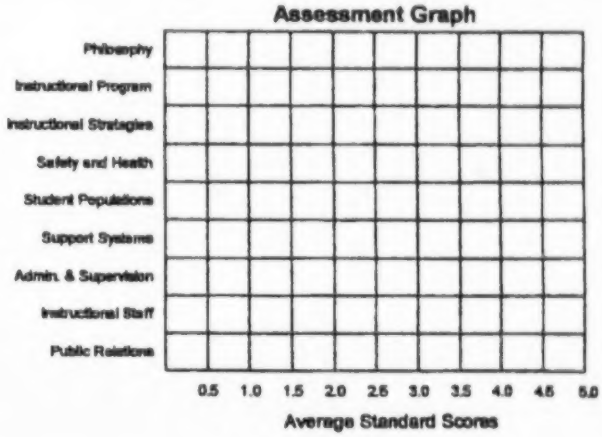
	Standard	1	2	3	4	5	6	7	Total	Group Standard Average	
1	Philosophy										1
2	Instructional Program										2
3	Instructional Strategies										3
4	Safety and Health										4
5	Student Populations										5
6	Support Systems										6
7	Admin. & Supervision										7
8	Instructional Staff										8
9	Public Relations										9

SAMPLE

Assessment Graph



Assessment Graph



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Assessment Summary

Philosophy – Avg. Score ____ _____

_____

_____

Instructional Program – Avg. Score ____ _____

_____

_____

Instructional Strategies – Avg. Score ____ _____

_____

_____

Safety and Health – Avg. Score ____ _____

_____

_____

Student Populations – Avg. Score ____ _____

_____

_____

Support Systems – Avg. Score ____ _____

_____

_____

Administration and Supervision – Avg. Score ____ _____

_____

_____

Instructional Staff – Avg. Score ____ _____

_____

_____

Public Relations – Avg. Score ____ _____

_____

Standards for Industrial Technology Programs

Standard 1 – Philosophy

Standard Statement:
A philosophy is a statement of fundamental beliefs that reflects a value system. It serves as a foundation and framework for establishing and maintaining all elements of an industrial technology program. Industrial technology programs shall have a current, comprehensive, written philosophical statement available as guidance for the development of the program.

1.1 Development

Because industrial technology is an integral part of the total school curriculum, a philosophy statement is developed by all interested parties to support the existence of the program.

A. The philosophy statement is developed as a joint effort of a number of contributors **including:**

1. Industrial technology teachers.

NA 1 2 3 4 5 _____

2. Administrators and supervisory personnel.

NA 1 2 3 4 5 _____

3. Students of industrial technology and local industrial technology clubs.

NA 1 2 3 4 5 _____

4. Parents, business and industry representatives, and other community members.

NA 1 2 3 4 5 _____

B. The philosophy statement supports the existence of the program. **The philosophy:**

1. Describes the industrial and technological nature of society in the past, present, and future.

NA 1 2 3 4 5 _____

2. Identifies the needs, abilities, and interests of *all* learners.

NA 1 2 3 4 5 _____

3. Addresses the value of career awareness, exploration, and preparation; vocational activities; consumer skills, creative talents; personal and social growth; problem solving skills, and teamwork in industrial technology.

NA 1 2 3 4 5 _____

4. Encourages development of personal and leadership skills through involvement in local, state, or national industrial technology clubs or organizations.

NA 1 2 3 4 5 _____

5. Focuses upon the broad categories of communication, construction, manufacturing, and transportation.

NA 1 2 3 4 5 _____

6. Is consistent with local, state, and national philosophies of education and industrial technology.

NA 1 2 3 4 5 _____

7. Is written and on file.

NA 1 2 3 4 5 _____

1.2 Utilization

The philosophy statement is the basis **for the program's:**

A. Planning.

NA 1 2 3 4 5 _____

B. Development.

NA 1 2 3 4 5 _____

C. Implementation.

NA 1 2 3 4 5 _____

D. Evaluation.

NA 1 2 3 4 5 _____

1.3 Reviewing and Revising

The philosophy statement is reviewed periodically and revised when necessary. **The statement is:**

A. Reviewed annually.

NA 1 2 3 4 5 _____

B. Revised based on the findings of the annual review.

NA 1 2 3 4 5 _____

		17	# of Objectives *minus*	
		- ____	# of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 2 - Instructional Program

Standard Statement:
The instructional program reflects the industrial technology philosophy through a variety of organized experiences designed to meet the needs of all students. These experiences assist students to reach the program's instructional goals.

2.1 Program Content Areas

Check mark the following content areas to be used in the program assessment and make comments in the space provided.

____ 1. Manufacturing

_____

____ 2. Construction

_____

____ 3. Communication

_____

____ 4. Transportation / Power and Energy

_____

____ 5. Technical Drawing/Computer Assisted Design (Fundamentals, Mechanical, Architectural, etc.)

_____

____ 6. Wood Technology (Furniture making, Cabinet making, Building Trades, etc.)

_____

____ 7. Metal Technology (Fabrication, Welding, Machine Shop, Foundry, etc.)

_____

____ 8. Small Engines, Automotive and Recreation vehicles.

_____

____ 9. Graphic Arts (Printing, desktop Publishing, etc.)

_____

____ 10. Electricity / Electronics

_____

____ 11. Plastics Technology / Composite Materials

_____

2.2 Goals

Program goals are established from standard one (philosophy) to provide direction for program development, implementation, and evaluation.

A. The program goals for students in industrial technology are to:

1. Develop skills, responsibility, and confidence to live and work in an industrial/technical society.

NA 1 2 3 4 5 _____

2. Develop knowledge and experience by safely using tools, materials, machines, and processes.

NA 1 2 3 4 5 _____

3. Integrate the application of industrial and technical experiences with the standards of the core curriculum (i.e. technical measurement, technical reading and writing, shop math, etc.).

NA 1 2 3 4 5 _____

4. Develop problem solving and creative thinking skills to construct prototypes, diagnose, and repair.

NA 1 2 3 4 5 _____

5. Demonstrate a viable work ethic.

NA 1 2 3 4 5 _____

6. Make informed and meaningful occupational choices through career exploration opportunities.

NA 1 2 3 4 5 _____

7. Prepare for entry into industrial/technical or trade school, or other post secondary educational programs.

NA 1 2 3 4 5 _____

8. Prepare for employment.

NA 1 2 3 4 5 _____

9. Develop leadership within the classroom environment.

NA 1 2 3 4 5 _____

10. Participation in local, state, and/or national industrial technology organizations.

NA 1 2 3 4 5 _____

B. Program goals for teachers in industrial technology **are to:**

1. Be consistent with industrial career and technical education, and with local needs and expectation.

NA 1 2 3 4 5 _____

2. Reflect traditional and emerging developments in industry.

NA 1 2 3 4 5 _____

3. Be developed by teachers, administrators, recent program graduates, representatives from business/industry, and other consultants.

NA 1 2 3 4 5 _____

4. Develop core curriculum interdisciplinary activities.

NA 1 2 3 4 5 _____

5. Review and revise curriculums annually or when otherwise necessary.

NA 1 2 3 4 5 _____

6. Be part of a local or regional articulation program.

NA 1 2 3 4 5 _____

7. Integrate with K-14 educational institutions.

NA 1 2 3 4 5 _____

8. Be written and on file.

NA 1 2 3 4 5 _____

2.3 Objectives

Objectives that reflect program goals are utilized for each course. **These objectives are:**

A. Written in measurable terms, are presented to students and kept on file.

NA 1 2 3 4 5 _____

B. Utilized by teachers and administrators for planning, implementing, and evaluating course content and instructional methods.

NA 1 2 3 4 5 _____

C. Utilized as a basis for developing the industrial technology component of the Individualized Education Program (IEP).

NA 1 2 3 4 5 _____

2.4 Content

Course content reflects the intent of the course objectives. **The content is:**

A. Developed from course objectives, utilizing endorsed curriculum guides, courses of study, and other professional resources in the broad categories of communication, construction, manufacturing, and transportation.

NA 1 2 3 4 5 _____

B. Selected to provide instruction for all students based on the goals and objectives of the program.

NA 1 2 3 4 5 _____

C. Sequential, beginning with broad orientation and exploration of subject matter areas, followed by specialized experiences.

NA 1 2 3 4 5 _____

D. Represented by all areas of industry and technology.

NA 1 2 3 4 5 _____

E. Organized into course outlines, unit and/or lesson plans that are on file.

NA 1 2 3 4 5 _____

F. Accurately described for each course and is available to all students prior to enrollment.

NA 1 2 3 4 5 _____

G. Reviewed and revised as required by the local district.

NA 1 2 3 4 5 _____

		28 - ____	# of Objectives *minus* # of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 3 – Instructional Strategies

Standard Statement:
Appropriate instructional strategies are designed and utilized to meet program goals, course objectives and student needs. The following methods are used to deliver and promote student achievement.

3.1 Planning

Written instructional plans, which meet individual student needs, are developed and utilized to achieve stated course objectives. **The teacher(s) will**:

A. Plan and prepare a written course of study designed to develop student competencies consistent with program goals, course objectives and employability skills.

NA 1 2 3 4 5 _____

B. Plan and prepare current lesson plans based upon the course of study, student needs, parental involvement and business/community involvement.

NA 1 2 3 4 5 _____

C. Create and develop appropriate methods using updated instructional materials to assist students in meeting course objectives.

NA 1 2 3 4 5 _____

D. Plan and provide evaluation for the effectiveness of instruction.

NA 1 2 3 4 5 _____

E. Provide time for input to the Individualized Education Plan (IEP) committee for disabled students enrolled in industrial technology classes.

NA 1 2 3 4 5 _____

F. Meet objectives at different levels through individualized instruction.

NA 1 2 3 4 5 _____

G. Utilize lessons that correspond with interdisciplinary classes such as English, math, and science.

NA 1 2 3 4 5 _____

H. Plan student leadership activities (i.e. local, state and/or national displays and competitions, etc.).

NA 1 2 3 4 5 _____

I. Plan and provide for articulation between your program and local colleges, career centers and industry.

NA 1 2 3 4 5 _____

3.2 Implementing

Instructional and leadership development methods are utilized to accomplish course objectives and meet the unique needs of individual students. **Teacher(s) will:**

A. Use both teacher-centered and student-centered instructional methods.

NA 1 2 3 4 5 _____

B. Include instructional methods for both group and individual student learning activities.

NA 1 2 3 4 5 _____

C. Utilize instructional methods that are based upon individual student needs.

NA 1 2 3 4 5 _____

D. Integrate local, state and national industrial technology activities into planned courses of study that are utilized in the classroom/laboratory.

NA 1 2 3 4 5 _____

E. Identify instructional strategies appropriate for serving students with special needs and incorporate them into the industrial technology program.

NA 1 2 3 4 5 _____

3.3 Methods

Instructional methods will be utilized in an industrial environment to:

A. Practice work experiences through the use of industrial equipment and processes.

NA 1 2 3 4 5 _____

B. Develop problem-solving skills and creative thinking through troubleshooting and teamwork.

NA 1 2 3 4 5 _____

C. Enforce a safe and productive atmosphere within the laboratory, shop or work site.

NA 1 2 3 4 5 _____

D. Provide career preparation and development of life skills through industrial work experiences.

NA 1 2 3 4 5 _____

E. Involve local business and industry in the development of curriculum.

NA 1 2 3 4 5 _____

F. Involve other academic disciplines through individual and group activities.

NA 1 2 3 4 5 _____

G. Develop job skills and career awareness through activities such as job shadowing or co-op.

NA 1 2 3 4 5 _____

H. Develop job skills by learning to use tools and materials.

NA 1 2 3 4 5 _____

I. Encourage students to explore career activities by designing and building prototypes and/or products using appropriate processes, equipment and raw materials.

NA 1 2 3 4 5 _____

J. Meet career preparation goals by using equipment, workplace practices, and certification requirements.

NA 1 2 3 4 5 _____

3.4 Evaluation

Instructional strategies are evaluated periodically and revised when necessary.

A. Student achievement is measured through a variety of testing techniques and other evaluation methods. (i.e. planning sheets, design sketches, and other documents)

NA 1 2 3 4 5 _____

B. Each disabled student enrolled in industrial technology is evaluated annually through procedures and criteria in the Individualized Education Program (IEP).

NA 1 2 3 4 5 _____

C. Student achievement is assessed to make decisions regarding the effectiveness of instructional materials and teaching strategies.

NA 1 2 3 4 5 _____

D. Provisions are made for student input into the evaluation of instructional strategies.

NA 1 2 3 4 5 _____

		28 - ____	# of Objectives *minus* # of NA's 0	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 4 - Safety and Health

Standard Statement:
A comprehensive safety and health program is essential to the success of a quality industrial technology program. The program must provide for a safe environment that promotes good life-long safety and health habits. A written, comprehensive safety and health program is implemented to ensure safe working conditions and practices in compliance with local, state, and federal regulations.

4.1 Program

Learning experiences and activities are designed for the development of knowledge, skills, and attitudes concerning the safe use of tools, machines, materials and processes.

A. An instructional plan for safety and health is prepared utilizing community resources, administrative personnel, instructors, and safety literature (MIOSHA Standards for General Industry).

1. Faculty prepares a written plan for a comprehensive safety and health program.

NA 1 2 3 4 5 _____

2. Administrative personnel provide support for and approval of the safety and health program.

NA 1 2 3 4 5 _____

3. Community resources, including the industrial technology advisory committee, provide input to the safety and health program.

NA 1 2 3 4 5 _____

4. Local, state and national safety and health literature and regulations are utilized in planning the safety and health program (MIOSHA Standards for General Industry).

NA 1 2 3 4 5 _____

5. Emergency action plans are part of the written plan.

NA 1 2 3 4 5 _____

B. Safety and health instruction is included in classroom and laboratory activities.

1. Instructional activities in the classroom and laboratories reinforce proper safety and health practices.

NA 1 2 3 4 5 _____

2. Safety and health instruction is adapted to individual student needs.

NA 1 2 3 4 5 _____

C. Techniques are utilized to evaluate the effectiveness of the safety and health program.

1. Safety and health practices are monitored continuously and reviewed annually by the faculty.

NA 1 2 3 4 5 _____

2. Local administrators and instructors evaluate and make recommendations on the effectiveness of the safety and health program.

NA 1 2 3 4 5 _____

3. External authorities periodically inspect and report on the safety and health program.

NA 1 2 3 4 5 _____

4. Students demonstrate acceptable knowledge, skill, and behavior through written and performance tests.

NA 1 2 3 4 5 _____

5. Faculty and administrators review recorded accidents and unsafe practices to correct any deficiencies.

NA 1 2 3 4 5 _____

4.2 Physical Environment

The physical facilities and equipment are designed, constructed, and maintained to ensure a safe and healthful learning environment.

A. Laboratory facilities comply with all local, state, and federal safety and health regulations.

1. Safety zones and aisles are properly marked. (R 408.10018)

NA 1 2 3 4 5 _____

2. Lighting is appropriate for activities performed within the facility. (R 325.2424)

NA 1 2 3 4 5 _____

3. The ventilation is appropriate for the activities performed within the facility. (R 325.2434[3])

NA 1 2 3 4 5 _____

4. Cabinets, containers, or rooms are available and approved to store flammable and corrosive materials. (R 408.17501)

NA 1 2 3 4 5 _____

5. Eyewash must be provided if corrosives are in use.

NA 1 2 3 4 5 _____

6. Safety and health accommodations are provided for all students including those with special needs.

NA 1 2 3 4 5 _____

7. Machines have printed, detailed standard operating procedures posted by each machine for review.

NA 1 2 3 4 5 _____

8. Floors and all other surfaces are kept free of waste material, grease and obstructions. (R 408.10031)

NA 1 2 3 4 5 _____

9. Each laboratory with powered equipment is equipped with one easily accessible (panic button) emergency disconnect switch. (R 408.10012)

NA 1 2 3 4 5 _____

10. Approved fire extinguishers are provided in appropriate locations. (R 408.10831)

NA 1 2 3 4 5 _____

11. A first-aid kit and related emergency supplies are provided.

NA 1 2 3 4 5 _____

B. Machines and tools are selected, organized, guarded, controlled, and ventilated in accordance with regulations and codes.

1. Equipment, which satisfies state or federal regulations, is selected on the basis of the ability to meet program objectives.

NA 1 2 3 4 5 _____

2. Machines are anchored, and tools are arranged in a safe and functional manner. (R 408.10031).

NA 1 2 3 4 5 _____

3. All machines and power tools are provided with approved commercial guards. (R 408.10034).

NA 1 2 3 4 5 _____

4. Safety guards remain in place, except when the machine is disconnected for cleaning, repair or adjustments. An instructor may only remove the guards. (R 408.12797).

NA 1 2 3 4 5 _____

5. Control switches are in convenient locations. (R 408.10033).

NA 1 2 3 4 5 _____

6. Lockable master switch boxes are located in each industrial technology laboratory. (R 408.18502).

NA 1 2 3 4 5 _____

7. Machines and work areas where dust or fumes are produced beyond acceptable health limits are connected to an exhaust system. (R 325.2437[4]).

NA 1 2 3 4 5 _____

8. A safety plan for removal of any hazard or hazardous material from machines or other items has been developed by faculty and administration.

NA 1 2 3 4 5 _____

9. Unsafe equipment must be removed, tagged or locked-out. (R 408.10012).

NA 1 2 3 4 5 _____

10. Equipment is repaired or replaced in a timely fashion.

NA 1 2 3 4 5 _____

11. Preventive maintenance is performed daily on equipment.

NA 1 2 3 4 5 _____

C. Faculty, staff, students, and visitors use personal protective equipment (PPE) to maximize safety.

1. Persons in the industrial technology laboratory must conform to all safety rules and regulations. (R 408.10012)

NA 1 2 3 4 5 _____

2. Approved *eye* protection is required of all persons exposed to conditions that may cause eye injury. (R 408.13312)

NA 1 2 3 4 5 _____

3. Approved *ear* protection is required of all persons exposed to noise levels above acceptable limits. (R 325.60103)

NA 1 2 3 4 5 _____

4. Approved *respirator* protection is required of all persons that may be exposed to respiratory damage. (R 325.60007, rule 3502)

NA 1 2 3 4 5 _____

5. Approved *head* protection is required of all persons exposed to conditions that may cause head injury. (R 408.13370)

NA 1 2 3 4 5 _____

6. Approved *foot* protection is required of all persons exposed to conditions that may be cause foot injury. (R 408.13385)

NA 1 2 3 4 5 _____

7. Specially adapted personal protection devices are available for used by students with special needs.

NA 1 2 3 4 5 _____

8. Personal protective equipment is cleaned and stored after each use. (R 408.13313)

NA 1 2 3 4 5 _____

4.3 Records

Records are on file to document the existence of an effective safety and health program.

A. Safety and health instructional records are on file.

1. Lesson plans documenting provision for safety and health instructions are on file.

NA 1 2 3 4 5 _____

2. Results of written and performance tests documenting students' safety and health knowledge are on file.

NA 1 2 3 4 5 _____

3. Material safety data sheets are on file and available. (MIOSHA Hazard Communication Standards)

NA 1 2 3 4 5 _____

B. Records detailing current safety and health conditions in the facility are on file.

1. Inspection, maintenance, repair and replacements records in the facility are on file

NA 1 2 3 4 5 _____

2. Accident reports and follow-up measures are on file.

NA 1 2 3 4 5 _____

3. Corrections to safety violations are documented and kept on file.

NA 1 2 3 4 5 _____

		48 - ___	# of Objectives *minus* # of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Letters and numbers in ( ) are specific standards out of the MIOSHA General Industry Standards. For more information or educational training on the Safety and Health Standards, you may write or call:

Michigan State Government
Safety Education and Training Division
Department of Consumer & Industry Services
G. Mennen William Bldg.
525 W. Ottawa
P.O. Box 30004
Lansing, MI 48909
(517) 332-1809
www.cis.state.mi.us/bsr/divisions/set/home.htm
(consulting, free literature, interpretation of regulations)

Standard 5 - Student Populations Served

Standard Statement:
All students regardless of special needs*, race, sex, creed or national origin will be admitted to and served by the industrial technology program, K-12.

5.1 Student Needs

All students regardless of their abilities and needs, will be served by the industrial technology program.
In the industrial technology program:

A. All students are provided a variety of meaningful experiences in accordance with the program goals and course objectives without compromising safety standards.

NA 1 2 3 4 5 _____

B. Academically and/or economically disadvantaged students are provided appropriate services and assistance as required, to enable them to succeed.

NA 1 2 3 4 5 _____

C. Physical, mental, and/or emotionally disabled students are provided supportive services and assistance, as required, to enable them to succeed.

NA 1 2 3 4 5 _____

D. Disabled students requiring additional or modified educational services or materials are enrolled only after the Individualized Education Program (IEP) has been prepared according to IDEA**.

NA 1 2 3 4 5 _____

E. Gifted and/or talented students are provided learning activities consistent with their abilities.

NA 1 2 3 4 5 _____

5.2 Student Diversity

Industrial technology provides equity for diverse populations.

A. Activities are provided for all students on a gender equity basis.

NA 1 2 3 4 5 _____

B. Industrial technology is provided for all students, regardless of their cultural or religious background.

NA 1 2 3 4 5 _____

* Terms and definitions according to state law Section 602(3) Children with Disabilities defined.
** Individuals with Disabilities Education Act as amended 1997 (PL105-17).

		7 - ____	# of Objectives *minus* # of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 6 - Support Systems

Standard Statement:
Support systems include human, physical, and financial resources that are necessary to implement and sustain a comprehensive industrial technology program.

6.1 Human Resources
District personnel, community members, and an advisory committee support the industrial technology program.

A. District personnel provide support for the achievement of the industrial technology program goals. **These personnel include:**

1. Teachers of other subjects to provide interdisciplinary support.

NA 1 2 3 4 5 _____

2. Paraprofessionals, special education teachers, and/or student assistants to help the industrial technology teacher(s) in serving all students, including those with special needs.

NA 1 2 3 4 5 _____

3. Guidance counselors **that will:**

a. Supply instruments to help determine aptitudes and areas of interest of students.

NA 1 2 3 4 5 _____

b. Assist in selecting classes that will meet individual student's career/vocational goals.

NA 1 2 3 4 5 _____

c. Regularly share with the teacher(s) important information concerning program students.

NA 1 2 3 4 5 _____

d. Ensure appropriate class size

NA 1 2 3 4 5 _____

e. Visit industrial technology classes regularly to provide proper guidance for course selection.

NA 1 2 3 4 5 _____

4. Secretaries to provide clerical services.

NA 1 2 3 4 5 _____

5. Custodial staff to assure a safe and sanitary learning environment.

NA 1 2 3 4 5 _____

6. Maintenance personnel to assure safe and functional lab environment.

NA 1 2 3 4 5 _____

7. Medical and/or health personnel to provide first aid when necessary.

NA 1 2 3 4 5 _____

B. The industrial technology teacher identifies and utilizes people within the community to assist in achieving program goals. **These community members include:**

1. Parents of current or former students.

NA 1 2 3 4 5 _____

2. People from business/industry.

NA 1 2 3 4 5 _____

3. Representatives of service and/or civic organizations (i.e. Lions Club, VFW, Goodwill, etc.)

NA 1 2 3 4 5 _____

C. An industrial technology advisory committee is established to support the program goals. **This committee will:**

1. Have representation from all stakeholders.

NA 1 2 3 4 5 _____

2. Assist teachers, administrators, and the board of education in planning, developing, implementing, and evaluating the program.

NA 1 2 3 4 5 _____

3. Meet at least once per year or as needed.

NA 1 2 3 4 5 _____

6.2 Physical Resources

Physical resources such as the facility, equipment, and instructional materials are provided to assist in achieving the program goals and course objectives.

A. **The facilities will:**

1. Have laboratories that average 2500 square feet or 125 square feet per student.

NA 1 2 3 4 5 _____

2. Have additional space of approximately 10 sqft. per student for storage of materials and projects.

NA 1 2 3 4 5 _____

3. Be logically arranged and maintained to provide for the design and construction of prototypes and/or trouble shooting, diagnosing and repairing of consumer products.

NA 1 2 3 4 5 _____

4. Provide at least 100 square feet of office space per teacher, within or adjacent to the facility.

NA 1 2 3 4 5 _____

B. Tools, equipment, and consumable materials will be supplied to meet program goals.

1. Properly maintained tools, machines, and equipment are available on the basis of their instructional value in fulfilling program goals.

NA 1 2 3 4 5 _____

2. Consumable supplies and materials are provided in sufficient quantity and quality for design and construction of prototypes, trouble shooting, diagnosing, and repair of consumer products.

NA 1 2 3 4 5 _____

C. Instructional materials will be supplied to meet program goals.

1. Audio/visual equipment will be provided.

NA 1 2 3 4 5 _____

2. Books and other supplementary materials are supplied in sufficient quantity.

NA 1 2 3 4 5 _____

3. Instructional materials are provided to meet unique requirements of students with special needs.

NA 1 2 3 4 5 _____

6.3 Financial Resources

Sufficient funds are budgeted and expended to operate and maintain the industrial technology program.
Finances are provided for:

A. Consumable supplies and materials.

NA 1 2 3 4 5 _____

B. Tools and equipment.

NA 1 2 3 4 5 _____

C. Maintenance and repairs.

NA 1 2 3 4 5 _____

D. Instructional materials.

NA 1 2 3 4 5 _____

E, Professional development.

NA 1 2 3 4 5 _____

F. Field trips.

NA 1 2 3 4 5 _____

		32 # of Objectives *minus*		
		- ____ # of NA's		
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 7 - Administration and Supervision

Standard Statement:
Administration and supervisors manage personnel and support faculty for the development and financing of a comprehensive industrial technology program.

7.1 Staffing

An appropriate number of certified and qualified administrators, supervisors, and faculty are provided to ensure attainment of program goals and objectives. **The administration will provide:**

A. Qualified and certified industrial technology teachers to meet enrollment demands.

NA 1 2 3 4 5 _____

B. Appropriate class size not to exceed the capacity and safety of the facilities and equipment.

N/A 1 2 3 4 5 _____

C. Teachers aides, paraprofessionals or special education teachers may be provided in classes with students with special needs or other situations that may require extra help.

NA 1 2 3 4 5 _____

D. An appropriate number of local industrial technology advisors are provided.

NA 1 2 3 4 5 _____

E. Department leadership and support for the industrial technology curriculum.

NA 1 2 3 4 5 _____

F. District wide leadership and support is provided to ensure that each K-12 industrial technology program meets the goals of the district.

NA 1 2 3 4 5 _____

G. Recommendations to state advisors to appropriate monetary and curricular support.

NA 1 2 3 4 5 _____

7.2 Planning and Organizing

This standard serves to ensure program direction, short and long range planning, organization and administration for program operation and improvement.

A. Advisors and teachers utilize established standards to plan and organize the industrial technology program.

NA 1 2 3 4 5 _____

B. Committee reviews, develops and adapts curriculum and industrial materials that are compatible with local and state industrial technology guidelines.

NA 1 2 3 4 5 _____

C. Faculty develops specifications for industrial technology equipment and resource materials.

NA 1 2 3 4 5 _____

D. Faculty develops specifications for industrial facility design, development, and renovation.

NA 1 2 3 4 5 _____

7.3 Budgeting

A budget will identify and procure all resources essential for the accomplishment of program goals and course objectives, consistent with student enrollment and unique student needs. **Funds are budgeted for:**

A. Purchase of equipment to accomplish course objectives, which includes the design and construction of student projects. Developing student prototypes will utilize an array of manufacturing equipment that will be found in the industrial technology lab.

NA 1 2 3 4 5 _____

B. Consumable materials and supplies in sufficient quantity and quality to achieve course objectives, such as the design and construction of prototypes, troubleshooting, diagnosing and repairing of industrial products.

NA 1 2 3 4 5 _____

C. Equipment maintenance and facility improvements to improve the student's ability to diagnose, troubleshoot, and repair industrial projects, and design and construct prototypes.

NA 1 2 3 4 5 _____

D. Instructional materials to accomplish course objectives,

NA 1 2 3 4 5 _____

E. Student field trips and other out of school experiences.

NA 1 2 3 4 5 _____

F. Expenses incurred through in-service and professional development activities.

NA 1 2 3 4 5 _____

7.4 Directing and Monitoring

Appropriate policy statements, written directives and advisory visits are utilized to ensure full program implementation.

A. Written and cooperatively developed departmental policies and directives are available that address the operation of the industrial technology program.

NA 1 2 3 4 5 _____

B. Advisory visits shall occur at least once per semester.

NA 1 2 3 4 5 _____

7.5 Data Collecting and Reporting

Information is collected, analyzed, transmitted and maintained on programs, teachers, and students.
The administration will:

A. Maintain reports required by local, state and federal agencies as well as financial and safety reports.

NA 1 2 3 4 5 _____

B. Oversee the maintenance and utilization of student records by appropriate school officials according to local, state, and federal regulations.

NA 1 2 3 4 5 _____

C. Make available properly maintained academic and medical profiles to the industrial technology teacher.

NA 1 2 3 4 5 _____

D. Distribute records and related information on all advisory committee activities to appropriate staff, administrators and other personnel.

NA 1 2 3 4 5 _____

E. Distribute records and related information on equipment, tools, textbooks and supplies to appropriate personnel.

NA 1 2 3 4 5 _____

7.6 Communicating

Communication is maintained among faculty, administrative personnel, students and the community. Effective, open communication pertaining to all elements in the instructional program is established and **utilized consistently among:**

A. Students

NA 1 2 3 4 5 _____

B. Faculty

NA 1 2 3 4 5 _____

C. Administrative personnel

NA 1 2 3 4 5 _____

D. Community

NA 1 2 3 4 5 _____

E. Other school staff

NA 1 2 3 4 5 _____

		29 - ___	# of Objectives *minus* # of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 8 – Instructional Staff

Standard Statement:
The instructional staff is both professionally and technically competent to provide students with a quality, comprehensive industrial technology program.

8.1 Legal/Regulatory Qualifications

The instructional staff meets established local and state degree, certification, and competency requirements.
The teacher(s) will:

A. Possess a minimum of a baccalaureate degree with a major/minor in industrial technology education.

NA 1 2 3 4 5 _____

B. Be competent in assigned teaching areas and possesses relevant work experience.

NA 1 2 3 4 5 _____

C. Develop, manage, and evaluate industrial technology classes.

NA 1 2 3 4 5 _____

D. Provide all students with appropriate learning experiences without compromising safety standards.

NA 1 2 3 4 5 _____

E. Have knowledge of the legal and liability requirements of the classroom and laboratory operations.

NA 1 2 3 4 5 _____

8.2 Professional/Educational Responsibilities

The industrial technology instructor provides a quality learning environment to satisfy the needs of each student.
The teacher(s) will:

A. Be an active member in professional and technical organizations related to industrial technology programs (i.e. MITES, VICA, or ACTE).

NA 1 2 3 4 5 _____

B. Participate in professional development activities for maintaining and expanding teaching skills.

NA 1 2 3 4 5 _____

C. Serve as an active member of the school improvement team.

NA 1 2 3 4 5 _____

D. Demonstrate a positive attitude for teaching and the advancement of industrial technology.

NA 1 2 3 4 5 _____

E. Actively participate with the development of the student's IEP.

NA 1 2 3 4 5 _____

F. Establish student expectations and implement a behavior policy.

NA 1 2 3 4 5 _____

G. Provide a safe learning environment that incorporates planning, design, and production.

NA 1 2 3 4 5 _____

H. Support interdisciplinary activities involving English, math, and science.

NA 1 2 3 4 5 _____

I. Provide a safe learning environment that incorporates troubleshooting, diagnostics, and servicing consumer products.

NA 1 2 3 4 5 _____

J. Pursue funding needed to acquire appropriate tools, as the program needs change.

NA 1 2 3 4 5 _____

K. Incorporate relevant experiences from industry into the school environment.

NA 1 2 3 4 5 _____

L. Provide activities related to career awareness, exploration, and preparation.

NA 1 2 3 4 5 _____

8.3 Personal Qualities

The industrial technology teacher(s) exhibits professional, personal qualities. **The teacher(s) will:**

A. Adhere to the written code of ethics.

NA 1 2 3 4 5 _____

B. Demonstrate appropriate written and oral skills.

NA 1 2 3 4 5 _____

C. Provide positive leadership in the classroom, school, and community.

NA 1 2 3 4 5 _____

D. Adhere to acceptable school dress code.

NA 1 2 3 4 5 _____

E. Exhibit punctuality and good attendance.

NA 1 2 3 4 5 _____

F. Be aware of students needs and abilities.

NA 1 2 3 4 5 _____

G. Use methods to motivate students for maximum performance.

NA 1 2 3 4 5 _____

H. Develop respect and rapport with students and community.

NA 1 2 3 4 5 _____

		25 - ____	# of Objectives *minus* # of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

Standard 9 – Public Relations

Standard Statement:
An informed and involved public is essential to the promotion of an industrial technology program. Various methods and media are utilized to inform and involve the school system, community, business/industry, and government to generate support and ensure program success.

9.1 Target Populations

Students, parents, business/industry, school personnel, and members of professional organizations are informed and given the opportunity to support the industrial technology program.

1. Students promote and support industrial technology programs through involvement in activities (i.e. MITES, VICA, ACTE, or other local industrial technology organizations).

NA 1 2 3 4 5 _____

2. Parents support and participate in the program by functioning as paraprofessionals and/or advisors.

NA 1 2 3 4 5 _____

3. District wide school personnel are informed to generate support, guidance, and interdisciplinary educational opportunities (i.e. open workshops may be offered to inform faculty and staff of what educational content is being offered in the program).

NA 1 2 3 4 5 _____

4. Building and district administrators are informed about and participate in the program.

NA 1 2 3 4 5 _____

5. State level administrators are informed about and participate in the program.

NA 1 2 3 4 5 _____

6. Local, state, and national professional associations are informed about and participate in the program (i.e. local or National Home Builder Association, Society of Manufacturing Engineers, Iron Workers Union, Skilled Trades Union Representatives).

NA 1 2 3 4 5 _____

7. Community service organizations are informed and encouraged to support the program (i.e. Rotary Club, Habitat for Humanity, and Chamber of Commerce).

NA 1 2 3 4 5 _____

8. Business/Industrial personnel are informed and given the opportunity to promote, implement, organize, and/or advise.

NA 1 2 3 4 5 _____

9. Outside educational institutions participate in the program (i.e. vocational centers, community colleges, and trade schools, etc.).

NA 1 2 3 4 5 _____

10. Technical, professional, and labor organizations are encouraged to support the program.

NA 1 2 3 4 5 _____

B. A public information program is utilized to inform and encourage the support of government officials. **The offices are:**

1. Local officials, including school board members.

NA 1 2 3 4 5 _____

2. State officials, including legislators and executive branch personnel.

NA 1 2 3 4 5 _____

3. National officials, including legislators and executive branch personnel.

NA 1 2 3 4 5 _____

9.2 Media

The industrial technology program's activities and accomplishments are highlighted through events, print media, and electronic media to involve the entire school and community. **Examples of the different media are:**

A. Print Media - articles describing unique industrial technology program activities and accomplishments, portfolios, newsletters, handbooks, brochures, and a syllabus.

NA 1 2 3 4 5 _____

B. Events – open houses, exhibits, displays, presentations, demonstrations, award banquets, and conferences.

NA 1 2 3 4 5 _____

C. Electronic Media – radio, television, web sites, and school announcements.

NA 1 2 3 4 5 _____

		16 - ____	# of Objectives *minus* # of NA's	
Standard Total _____	*divided by*	_____	=	_____ Average Score

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